

QUANTITATIVE CLASSIFICATION
OF IGNEOUS ROCKS

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BASED ON CHEMICAL AND MINERAL CHARACTERS, WITH
A SYSTEMATIC NOMENCLATURE

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BY

WHITMAN CROSS
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WITH AN INTRODUCTORY REVIEW OF THE DEVELOPMENT OF
SYSTEMATIC PETROGRAPHY IN THE NINETEENTH CENTURY

BY

WHITMAN CROSS



1903

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TO
WILLIAM F. HILLEBRAND
AND TO HIS ASSOCIATES
CHEMISTS OF THE UNITED STATES GEOLOGICAL SURVEY
IN RECOGNITION OF THEIR SERVICES
TO THE SCIENCE OF PETROLOGY
THIS WORK IS GRATEFULLY DEDICATED BY THE AUTHORS

PREFACE.

It has seemed advisable, in order to assist petrographers and students of igneous rock who may wish to adopt the method of classification proposed by the authors, to publish in separate form the essays that have appeared in Volume X of the *Journal of Geology*, with the addition of tables to aid in the calculation of mineral and chemical compositions of rocks, and with a glossary of the new terms employed in the nomenclature.

Much of the material will be useful to those, also, who do not follow the new classification, since it has a general application to petrography. Thus the "Review of the Development of Systematic Petrography in the Nineteenth Century" presents a historical sketch of the subject which is valuable to all students of petrology.

The methods of calculation by which the minerals of a rock may be reckoned from its chemical analysis, and the reverse process, will become more and more of a requirement in the practice of petrographers, as the demand for quantitative description increases. And the convenience of tables in carrying on the operation will be appreciated by all who undertake the work.

The glossary will be found useful to those who adopt the new system in defining specifically each new term, particularly the magmatic names which appear for the most part only in the tables of the five classes where it requires some consideration to frame their definitions. Their full value will be appreciated when they are studied in connection with the collection of some thousands of rock analyses made within the past fifteen years, which has been prepared by Henry S. Washington, and will be published shortly.

It is hoped that the present publication will contribute to the better understanding of the development of petrography, and to a fuller appreciation of its defects and needs, and will point out a way along which substantial advancement may be made in the future.

THE AUTHORS.

SEPTEMBER 12, 1902.